GLOSSARY

Definitions are tailored to anadromous fish and the captive rearing program, and may have different meanings in different contexts.

alevin - The life stage of a fish at which the fish has hatched from egg, but remains attached to its egg sac.

alleles – Sites on individual genes composed of some variation of two amino acids. Taken together, these alleles make up the individual gene, which, taken together, encode the genetic heritage of the individual and determine gene-linked physiological, morphological, and behavioral traits.

anadromous (fish) – Species of fish that spend a part of their lifecycle in fresh water, and another part in salt water.

behavior (fish)/behavioral characteristics - Pertaining to behaviors of an individual fish or population of fish whose behaviors are adapted to a specific in-stream environment.

breeding unit – a term used to designate a subpopulation of fish that mate exclusively among themselves (unless straying occurs), and contain within the subpopulation 100 percent of the designated subpopulation's genetic material.

broodstock (wild/captive) - Fish capable of reproducing, either in the wild or in the hatchery.

broodyear (BY) - The year a group of fish spawns; the year of origin of a cohort.

captive rearing - Referring to a set of program techniques and scientific protocols with goals to remove juvenile wild fish from their stream of origin, rear them to sexually mature adults, and release them back to their stream of origin to breed.

carrying capacity - Given the topological and biological profile of a particular habitat, its capacity as related to its ability to provide support (provide food, cover, etc.) for a particular population of fish.

Council - The Northwest Power Planning Council. The Council was mandated under the Northwest Power Act to manage anadromous fish conservation and recovery and power distribution in the region. Funded by BPA.

cryopreservation - Pertaining to the freezing of biological material for preservation and storage.

culture (fish) - Pertaining to the artificial spawning and rearing of fish, usually in a hatchery, or the artificial management of any element of the life cycle of a fish.

demonstration program - A program recognized by authorizing and funding agencies as an experimental program designed to prove or disprove its own hypotheses. Such programs usually have limited goals and small samples, and are held to less rigorous conservation standards than a full-scale program.

domestication effects - Referring to morphological, physiological, and behavior changes that issue from hatchery rearing when the changes are selected by that environment. Such changes, if genetically based, are theorized to enter the gene pool of a wild fish population when the hatchery-reared fish are allowed to spawn with that wild population.

Endangered Species Act (ESA) - The Endangered Species Act of 1973 recognizes several levels of risk to species that are depressed due to human or natural actions. The ESA requires consultation among Federal agencies taking actions that may disturb the habitat of such species and the agencies with authority over different habitats.

escapement - Referring to adult fish that have survived to return to their place of origin and spawn.

Evolutionarily Significant Unit (ESU) - Refers to a population that's continued existence is crucial to the preservation of the larger species.

eyed egg - A fertilized egg (embryo) that has developed to the point where the eyes become readily visible.

fecundity - Refers to the numbers of eggs produced by an individual female of the species.

forecasted adult returns - The numbers of adult fish of a population predicted to return to their streams of origin to spawn, based on past returns, fertilization rates, escapement rates, and known ocean conditions.

gametes – The reproductive cells that unite with one another to form the cell that developed into a new individual.

genetic - Referring to the genes, or basic functional units of inheritance of a species.

genetic diversity/variability - All the genetic variation in an individual, population, or species.

genotype - Refers to the genetic material and its structure in the individual that expresses itself in the phenotype of that individual.

habitat - The physical/biological environment in which fish spend some or all of their life cycle, to which the fish are well adapted.

haplotype – The set of genetic determinants received from one parent.

hatchboxes - Boxes in which fertilized eggs are put prior to hatching. Hatchlings remain in the boxes as alevins. When the alevin loses its egg sac, it swims to the surface of the box and out as a fry. The boxes are designed to approximate natural conditions for hatching, such as allowing for water flow-through, etc.

hydroelectric (dams) - Referring to energy produced by a flow of fluid water through or around turbines; the turbines transform the energy from flow into electrical energy for generation and/or storage.

inter-specific/intra-specific - Among species and within a species.

life history - The physical appearance and/or social behavior of a population or individual of a species at each biologically differentiated phase of the life cycle.

listed threatened and endangered species/population/evolutionarily significant unit - A species listed through the Endangered Species Act as threatened, endangered, or of special concern.

metapopulation - The totality of subpopulations of a species in a region that can be considered genetically similar.

mitigate - Measures to reduce impacts from actions taken, including: 1) Not taking a certain action or parts of an action, 2) limiting the degree or magnitude of an action and its implementation, 3) repairing, rehabilitating, or restoring the affected environment, 4) preservation and maintenance operations during the life of the action, and/or 5) replacing or providing substitute resources or environments.

morphological - Refers to physical characteristics of an individual fish, such as coloration, size, shape, etc.

National Environmental Policy Act (NEPA) - The National Environmental Policy Act of 1969 requires the production of various levels of analysis for any Federal activity. Levels of analysis include Categorical Exclusions (CX), a short document that demonstrates that the action would not impact the environment in which the activity takes place; Environmental Assessments (EA), which demonstrate that, while there may be impacts, they will not be significant; and Environmental Impact Statements (EIS), which demonstrate that impacts are uncertain.

native population – A population of fish that has not been substantially impacted by genetic interactions with non-native populations, or by other factors that persist in all or part of its original range. In some cases, a native population may also exist outside of its original range (e.g., in a captive broodstock program).

natural spawning population - A species endemic to an area; species naturally reproducing in an area.

natural production - Production of offspring by natural in-stream spawning of broodstock and birth, as opposed to artificial production.

naturally spawned - Fertilization of the female gamete by a male, unassisted, in the natural habitat.

Northwest Power Act - Pacific Northwest Electric Power Planning and Conservation Act of 1980

outplanting - Release of an individual or population from the hatchery back to stream of origin to finish its life cycle in its natural habitat.

parr - Life stage of a juvenile anadromous fish between swim up and smoltification. Usually lasts about 8 to 12 months, at which point the fish begins the morphological, physiological, and behavioral adaptations to a saltwater environment and begins migration.

pathogens - Disease-bearing agents, such as certain types of bacteria.

phenotype - The outward appearance of an organism resulting from the interaction of that organism's genotype and environment.

pysiology/physiological characteristics - The physical and chemical processes or functions in an organism.

population – A group of organisms of the same species that breed in the same place and time, and whose progeny tend to return and breed in approximately the same place and time, exhibiting reproductive continuity from generation to generation.

pre-smolt - The life stage of a juvenile anadromous fish following the parr stage and prior to smolt stage. At this life stage, the fish remains adapted to freshwater habitat, and continues feeding and rearing in its natal stream, or may begin its downstream migration.

production - The emergence of offspring from breeding populations.

propagation, artificial/natural - Production of a species by means other than natural production, relating mainly to hatchery production. Such artificial propagation usually entails the capture of male and female broodstock; some manual/mechanical process for gamete retrieval and fertilization; and mechanical incubation of fertilized eggs; and rearing of fry.

protocols - The plan for carrying out a scientific study.

quarantine - The segregation of one fish population from another to prevent disease transmission, interbreeding, etc.

recovery – The establishment of a threatened or endangered species to self-sustaining level in its natural ecosystem (i.e., to the point that the protective measures of the Endangered Species Act are no longer necessary).

redd - A bed of anadromous salmon eggs present within the natural substrate of a stream.

release - Referring to the reintroduction of an individual or population to their natural habitat from an artificial environment.

scoping - The sub-process within the National Environmental Policy Act process which seeks to identify pertinent issues to be analyzed within such NEPA documents as Environmental Assessments or Environmental Impact Statements.

smolt - The life stage of an anadromous salmon during which it migrates from its natal stream as a juvenile to its arrival in the marine environment. This stage is characterized by emerging physiological, morphological, and behavioral changes (called smoltification) that adapt the fish to its new environment.

spawning matrix - A table of cross-referenced spawning criteria used to select proper spawning protocols given specific broodstock availability and/or genetic variability conditions.

supplementation – The use of artificial propagation to re-establish or increase the abundance of naturally reproducing populations (cf. recovery/restoration).

swim up - The period during which an alevin completes its development on the bottom of a river or hatchbox and subsequently swims to the surface as a fry.

sympatric – Referring to a pattern in which differing species evolve together (spacially), adapting to and exploiting differing habitats and resources within the same ecosystem.

underseeded - A body of water (in the case of anadromous salmon, a stream or river) that's carrying capacity exceeds the number of fish utilizing it.

wild fish - Genetically unique populations of fish that have maintained reproduction successfully without artificial rearing from hatcheries.